

NOTES ON ANCIENT BRITISH MONUMENTS.¹II.—*The Cornish Cromlechs.*

FROM the point of view of orientation, the interest in barrows, tumuli, chambered cairns, dolmens and cromlechs lies in the assumption that they were built for live men to dwell in. That they all represent different stages of the same structure—stages depending upon decay due to the action of rain, or wanton destruction in the interests of agriculture—can be gathered from a complete study of the whole evidence.

Borlase, in his "Dolmens of Ireland" (p. 426), refers to some of it. Mr. John Bell, of Dundalk, a famous antiquary, disinterred no less than sixty cromlechs from cairns or barrows in Ulster. Many "cairns," indeed, on the early Ordnance maps are marked dolmens in subsequent editions, the interior stone framework being the only thing remaining after the covering of soil had been re-distributed over the fields, an ordinary "agricultural" operation.

Borlase insists upon the fact that large tumuli were not essential; "all that was necessary was that the walls of the cell or crypt should be impervious to the elements and to wild animals" (p. 427). As a corollary to this, "in distinction from the cist, it was the intention and object of the builders that access should be had to it [the cell or crypt] from without."

It was this intention which has provided us with "creeps," "fougous," "allées ouvertes," and "allées couvertes," and these, as I shall show, are of as high importance as the cell itself from the orientation point of view. They all constituted, not only entrances, but "outlooks" for the man inside; and it matters not whether the cell was as extensive, as complicated, as carefully built, and the creep as long, as at Maeshowe, or whether we deal with a cell of the simplest and rudest form, with a bare entrance and outlook, such as the creephole in one of the stones at Trevethy.

Archæologists, as a rule, though not, I think, universally, consider the whole series of structures we are now dealing with as having originally, whatever their present stage, been constructed for tombs.

For them there is little difference between such a cell with an entrance such as the barrows and cromlechs reveal; and a cist, which is simply a rude small coffin built up of five or six stones, in which there is only room for the body, and to which there is no entrance at all. The evidence on which they rely is that certain things have been found in these cells, which they consider can only have been associated with burials.

¹ Continued from p. 59.

The argument against this view does not only depend upon the details of structure, such as revealed in Maeshowe, perhaps the most perfect cell now remaining, but upon their association with other stone monuments, especially with stone circles; so that as the Gorsedd we see to-day is but a survival of the ancient stone circle which was associated with living men, the cromlechs must, in all probability, have been also associated with living men. They are not merely tombs. I hold that they were never meant for tombs, and to argue that they were built for sepulchral purposes because people have since been buried in them is to deny that a church was built for the worship of God because we find corpses in it.

If we consider frankly and fairly the position of the first priests and leaders of the people who controlled the worship and the daily life of the early inhabitants of Britain, we can arrive at a quite plausible theory concerning these cromlechs.

The circle builders had to look after the welfare of the surrounding population, and see what they could do to help them in every way; and when we consider



Photo. by Lady Lockyer.

FIG. 7.—Cromlech on Lesquoit Farm, near Bodmin. The upright stone on the right is oriented to the May sunrise.

that, I think much of the mystery surrounding the cromlech is at once cleared away. In the first place, there is no doubt in my mind that these people, who had command of the sea, and came over here and built the circles and cromlechs along our shores, and cared very little for going inland where they could not be supported by their constantly returning ships, were Semitic in their origin, or familiar with the Semitic peoples. In any case they must have lived somewhere, and with some kind of shelter.

Now we know from Robertson Smith that Semitic worship was carried on in caves, and one reason for this might have been that the priests really lived in caves.

Now the cromlech was really an improvement upon the natural or artificial cave, and, further, if there were no caves, some shelter must have been provided. The easiest way to protect the priests and priestcraft from the elements and from animals was by erecting such a structure as stones would enable them to do,

and then covering it with earth which could not fall upon them, and I look upon the stones of the cromlech as the skeletons of the barrows which were thus built to protect the people living in them.

One of the first things that they wanted to be pro-

They must have required food as well as drink, and they must have cooked their food, or have eaten it raw; the evidence of bones and ashes shows that they cooked it. Considerations of this kind suggest that many of the things, including structure and contents,

that archæologists have associated with death may as reasonably and probably have been associated with the life conditions possible to the early inhabitants of our islands.

The above-stated view that men really lived in the cromlechs, which we know to have been associated geographically with the circles, would be strengthened if we could show that the construction of the cromlechs was such that they were associated with circles in other ways, and in such ways as would require the presence of the same men in both.

I have recently commenced the study of the cromlechs from this point of view, using the orientation theory as my guide. The work at the circles has shown conclusively—to my mind at all events—that they were used, among other things, as calendars or almanacks, to watch the sun's course throughout the year and so locate the various festivals which are all older than Christianity; and as

night-dials to determine the lapse of time during the night and the rising of the morning star, so that the morning fire-sacrifice could be made at the moment of sunrise.

tected from was damp. It was important to keep out the rain, because they had their fires to look after, not merely for cooking purposes, but for sacred purposes, and if they did not keep their sacred fires going, as Mr. Baring-Gould believes they did, they must have been, at all events, sure of a supply of dry wood. That is one reason why they should try to keep out the damp. Britain was then much richer in wild animals than it is now, and measures had to be taken to protect the priests, both in the day and during the night, from the incursions of animals by keeping them out in some way or other. I think this is a point which archæologists have not sufficiently considered. There were no carpenters in those days. They could not cut down a tree. They could not make a door. When we consider the matter carefully, we find that the only way to protect themselves was by constructing, however large the chamber, an entrance to it which should be very small, because it must have been closed by a small stone, capable of being handled by one or two men, the only way they had of sealing it.

Then these people had to drink, and it was only natural that they should have a water supply in these cromlechs. May that not be the real origin of all the crockery, large or small, and the horn spoons, that one finds in these places?

Now all this would require a staff, and both the staff and the fire would require some shelter. I have assumed the cromlech to be this shelter, and this assumption enables us to go a step further. A convenient arrangement would be that much or most of



Photo. by Lady Lockyer.

FIG. 8.—Druid's Altar at Pawton, near Bodmin, looking to May sunrise.



Photo. by Lady Lockyer.

FIG. 9.—Druid's Altar, looking towards November sunset.

the watching during the night—it was all night work if in the term night we include the dawn—could be done in the shelter itself, and this could be managed if the entrance to it was aligned on the part of the horizon to be chiefly watched.

Now what were those points? The circles supply the information. They were chiefly, as the May-year was then paramount, the sunrise place in May and August, when the sun's declination is $16^{\circ} 20'$ N., and that in November and February, when the sun's declination is $16^{\circ} 20'$ S., these two sunrise places marking off the quarters of the year and the chief festivals. Next came the rising place of the clock-star, and later the place of sunrise on the longest and shortest days—the solstices.

The question to be settled, then, is, Do the entrances to the cromlechs point in these directions? Could the priests have done their night work under shelter?

Some of the data used in the attempt to answer this question I have obtained myself from the monuments; in other cases I have endeavoured to get the required information from the so-called plans or surveys to be found in archaeological records. The great majority of these, however, I have found to be utterly useless for my purpose. A brilliant exception, however, is found in the carefully oriented work of Lukis on the Cornish monuments, so I will begin with Cornwall and the May-year sunrises.

The following table gives the theoretical values of the azimuths of the sunrise places. It has been previously shown in my book, "Stonehenge," that the circles conform to them.

Cornwall. Lat. 50° .

Conditions	True Azimuths	
	May and August sunrise	November and February sunrise
Sea horizon, refraction, semi-diameter	N. $62^{\circ} 58'$ E.	S. $64^{\circ} 32'$ E.
$\frac{1}{2}^{\circ}$ hill	N. $63^{\circ} 44'$ E.	S. $64^{\circ} 22'$ E.
1° "	N. $64^{\circ} 30'$ E.	S. $63^{\circ} 34'$ E.
$1\frac{1}{2}^{\circ}$ "	N. $65^{\circ} 16'$ E.	S. $62^{\circ} 50'$ E.
2° "	N. 66° E.	S. $62^{\circ} 5'$ E.

Following this table I give another, showing the azimuths of most of the chief Cornish cromlechs.

Orientation of Cornish Cromlechs.

Name	Remarks	Azimuths (true)
SERIES 1		
Lesquoit Farm	My own observations, April, 1907, near Bodmin. Hill, $1\frac{1}{2}^{\circ}$	N. 64° E.
Druid's Altar ...	My own observations, April, 1907, at Pawton. Hill, $1\frac{1}{2}^{\circ}$	N. 64° E.
Lanyon Quoit...	This was "re-erected" before Lukis's time, so I have taken Borlase ("Antiquities of Cornwall," plate xxi), assuming his N. is N. true ...	N. 66° E.
Mulfra Quoit ...	Lukis, plate xix ...	N. 63° E.
Chywoone Quoit	" " xx ...	N. 64° E.
Zennor Quoit ...	" " xxi ...	N. 64° E.
Three Brothers of Grugith ...	" " xxiii ...	N. 64° E.
SERIES 2		
Trewethy ...	My own observations, April, 1907, near St. Cleer ...	S. 62° E.
Caerwynen ...	Lukis, plate xxiv ...	S. 65° E.
Pennance ...	" " xxix ...	S. 64° E.

We see, then, that many of the chief Cornish cromlechs are aligned on the May and August or the November and February sunrises as carefully as are the outstanding stones connected with the associated circles.

The true azimuths have been determined from magnetic observations made by Lukis and myself by subtracting $20^{\circ} 30'$, the west variation in Lukis's time, and 18° at the present in the case of my own observations; it will be seen that they agree closely with the theoretical values given above.

The above list, however, does not exhaust all the cromlechs in Lukis's work perfect enough to allow of their orientation to be determined. We have:—

Name	Remarks	Azimuths (true)
Tregiffian ...	Lukis, plate xv... ..	N. 52° E.
Barrow near Tregaseal circles ...	Lukis, plate xvii, reproducing Trounson... ..	S. 50° E.

These are solstitial alignments. The variation of 1° or 2° in this and the preceding table no doubt arises from the fact that the height of the horizon varies from place to place, and no information on this head is given by Lukis.

NORMAN LOCKYER.

THE PRESERVATION OF EGGS.

FEW people not directly connected with the trade have any adequate idea of the extent to which the egg of the domestic fowl is imported into this country. Whether the volume of this trade ought to be an unmixed source of satisfaction to us is another question, for there can be little doubt that if some of the energy, enterprise, and organising power which have been turned to such excellent account in Denmark, for example, were applied to the production of eggs in this country, we should be less dependent than we are on foreign supplies. Intimately bound up with this question of egg production is that of their preservation, but although much has been written on the value of particular methods, no systematic investigation of the conditions under which eggs must be kept to maintain and ensure their quality as food has hitherto been attempted, nor has any proper comparison been made as to the relative merits of the various methods which are practised. Those who are interested in this important subject will therefore welcome the appearance of a paper by Mr. Fr. Prall in a recent number of the *Zeitschrift für Untersuchung der Nahrungs- und Genussmittel* (No. 7, vol. xiv., October 1, 1907, p. 445), in which the question is treated both observationally and experimentally with all the precision and care which should characterise a scientific inquiry.

The adequate solution of this problem demands that the eggs when preserved shall maintain their normal appearance, smell and taste; in other words, they must in nowise differ in chemical and physical characters, or in behaviour on cooking, from fresh eggs. The chemical and physical changes to which eggs are naturally subject are largely dependent on the temperature and relative humidity of the air, and on the presence in it of moulds and germs. In an absolutely sterile atmosphere at a sufficiently low temperature and of a proper degree of humidity, eggs will preserve their "freshness" for very long periods of time, if not indefinitely; and all successful methods of keeping eggs imply a practical recognition of these conditions.

Of the various methods of distinguishing old and